

## A COLLECTION OF PSOCOPTERA (INSECTA) FROM WESTERN AUSTRALIA INCLUDING FOUR NEW SPECIES

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(Figures 1-25)

Through the courtesy of Dr. C. F. H. Jenkins I have been able to examine a collection of Psocoptera from the Department of Agriculture, Perth, Western Australia. Previously published records for the State are to be found in Enderlein (1907), McLachlan (1866) and Smithers (1963). This paper records thirteen species of which four are new.

### Family TROGIIDAE

*Lepinotus inquilinus* Heyden.

2♂, ex crates from New Zealand, Trayning, 19.vi.1968. *Note*: This is a cosmopolitan domestic species, recorded from Queensland, New South Wales and Tasmania as well as from New Zealand.

*Lepinotus patruelis* Pearman.

5♀, ex barley straw from France, Civil Aviation Department, Graylands, 25.i.1965. *Note*: A widespread domestic species, including France, not previously recorded from Australia.

### Family PSYLLIPSOCIDAE

*Psyllipsocus ramburi* Selys-Longchamp.

3♀, 1 nymph, ex skirting boards of new house, Applecross, 27.viii.1954. *Note*: A widespread domestic and cave species.

### Family PERIPSOCIDAE

*Ectopsocus cinctus* Thornton

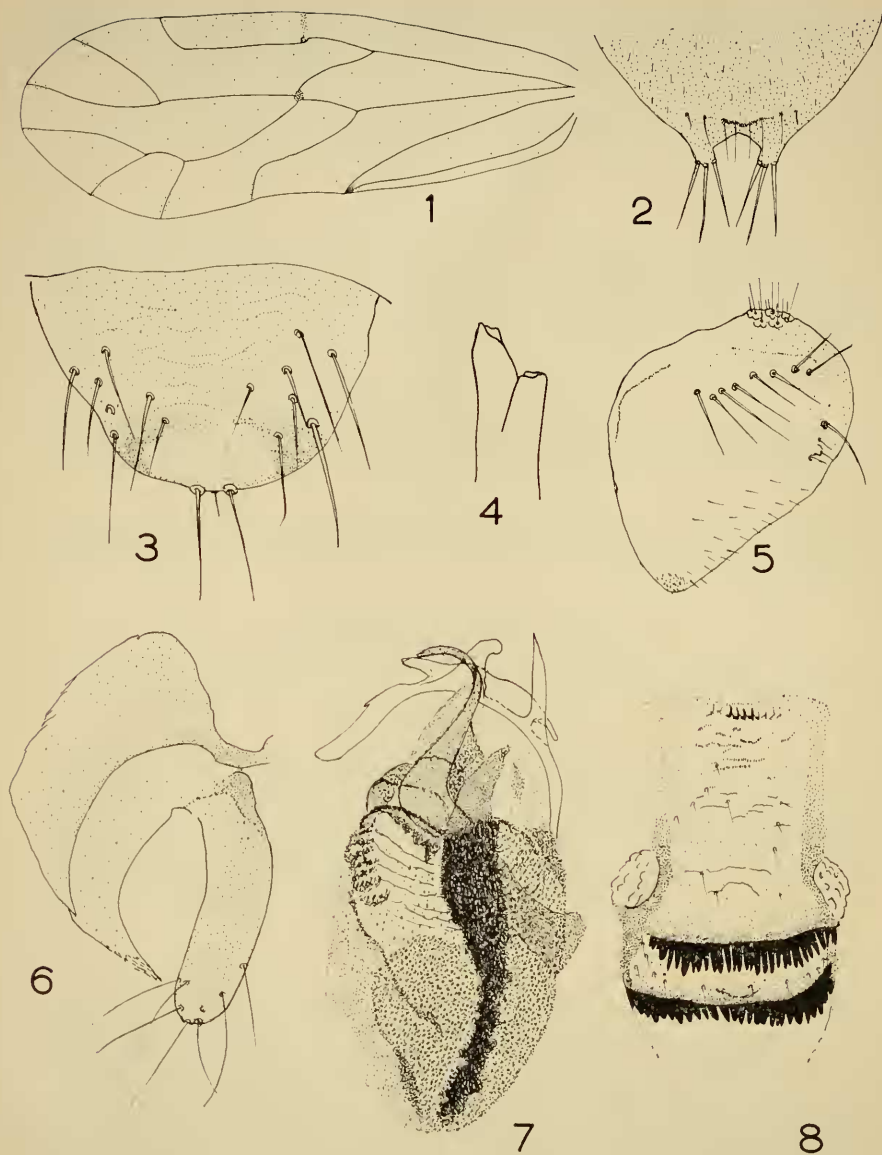
2♂, 2♀, Kununurra, Western Australia, 27.iii.1969; 3♀, 1 nymph, same locality, 13.iii.1969; 2♀, same locality, 4.iv.1969, L. R. Greenup. This species was described from Hong Kong and subsequently recorded from India, Malaya and Vietnam (Thornton and Wong, 1968, *Pacific Ins. Monogr.* 19:13) and has been taken in an aerial sample off Nicaragua (Thornton and Harrell, 1965, *Pacific Insects* 7:701). It has not previously been recorded from Australia.

*Ectopsocus cetratus* sp. n.

(Figures 1-8)

### FEMALE.

*Coloration*. Head brown with dark brown confluent spots adjacent to the compound eyes, across the vertex and adjacent to the median epicranial suture. Frons pale with a dark spot anterior to median ocellus above epistomial suture. Postclypeus marked strongly with dark brown stripes which converge in the midline. Posteriorly the stripes are straight, becoming strongly curved in the anterior part of the postclypeus. Labrum pale with a dark spot on either side of the midline on the anterior margin as is usually the case. Genae brown. Antennae uniformly pale brown. Eyes black. Ocelli pale, bordered internally with brown. Maxillary palp with first and second segments pale, third brown, fourth dark brown. Dorsum of mesothorax dark brown, pale along sutures and with a fine median, longitudinal pale stripe; centre of scutellum pale. Legs brown, second tarsal segment a little darker than remaining leg segments. Fore wings (fig. 1) hyaline, faintly tinged with brown, a little darker at the ends of veins and at junction of Rs and M. Abdomen pale, with faint irregular suggestions of darker annulation; apical structures brown.



Figures 1-8.—*Ectopsocus cetratus* sp.n. 1. Fore wing, ♀; 2. Subgenital plate, ♀; 3. Epiproct, ♀; 4. Lacinia, ♀; 5. Paraproct, ♀; 6. Gonapophyses, ♀; 7. Phallosome, ♂; 8. Apical abdominal sclerifications, ♂.

*Morphology.* Length of body 2.0 mm. Vertex smoothly rounded, median epicranial suture distinct; pubescence fine and short. Postclypeus not prominent. Length of antennal segments:  $f_1$ : 0.27 mm.;  $f_2$ : 0.17 mm. Eyes fairly small, not reaching level of vertex when viewed from the side. IO/D: 4.5; PO: 1.4. Lateral ocelli large, anterior ocellus very small. Lacinia (fig. 4). Measurements of hind legs: F: 0.38 mm.; T: 0.68 mm.;  $t_1$ : 0.23 mm.;  $t_2$ : 0.10 mm.; rt: 2.3; 1.0; ct: 13, 0. Fore wing length: 2.0 mm.; fore wing width: 0.7 mm. Fore wing (fig. 1) as usual in the genus. Rs and M meeting in a point in most specimens. Setae on veins small and sparse. Epiproct (fig. 3) with two very strong posterior setae. Paraproct (fig. 5). Subgenital plate (fig. 2). Gonapophyses (fig. 6).

#### MALE.

*Coloration.* As a female.

*Morphology.* Length of body: 1.8 mm. Lengths of antennal segments:  $f_1$ : 0.325 mm.;  $f_2$ : 0.175 mm. Eyes fairly small, not reaching level of vertex when viewed from the side. IO/D: 2.7; PO: 0.66. Ocelli as in female. Measurements of hind leg: F: 0.40 mm.; T: 0.725 mm.;  $t_1$ : 0.25 mm.;  $t_2$ : 0.1 mm.; rt: 2.5; 1.0; ct: 15, 0. Fore wing length: 1.9 mm.; fore wing width: 0.6 mm. Abdomen with characteristic apical dorsal sclerotizations (fig. 8). Phallosome (fig. 7).

#### MATERIAL EXAMINED:

7 ♀ ♀, 6 ♂ ♂, Southern Cross, Western Australia, ix.1955. Holotype ♀, allotype ♂, paratypes in The Australian Museum; paratypes in Department of Agriculture, Perth, Western Australia.

*Ectopsocus* is a large genus. *E. cetratus* is easily distinguished by the form of the subgenital plate and gonapophyses of the female and by the form of the phallosome and apical sclerotizations of the male abdomen. The presence of such sclerotizations is a characteristic feature of *Ectopsocopsis*. The form of the female subgenital plate and of the gonapophyses leaves no doubt that the present species should be regarded as an *Ectopsocus*, although the sclerotizations of the male abdominal apex make it possible to regard this species as an intermediate one. When the world fauna of these two genera becomes better known a regrouping of species may be necessary.

*Peripsocus macropterus* Edwards.

4 ♂, Carmel, 6.ix.1950. F. E. Ryan.

*Peripsocus milleri* (Tillyard).

19 ♀, Harvey, 12.i.1954. B. A. Edwards.

#### Family ELIPSOCIDAE

*Propsocus pallipes* (McLachlan).

46 ♀, 29 ♂, Southern Cross, September, 1955.

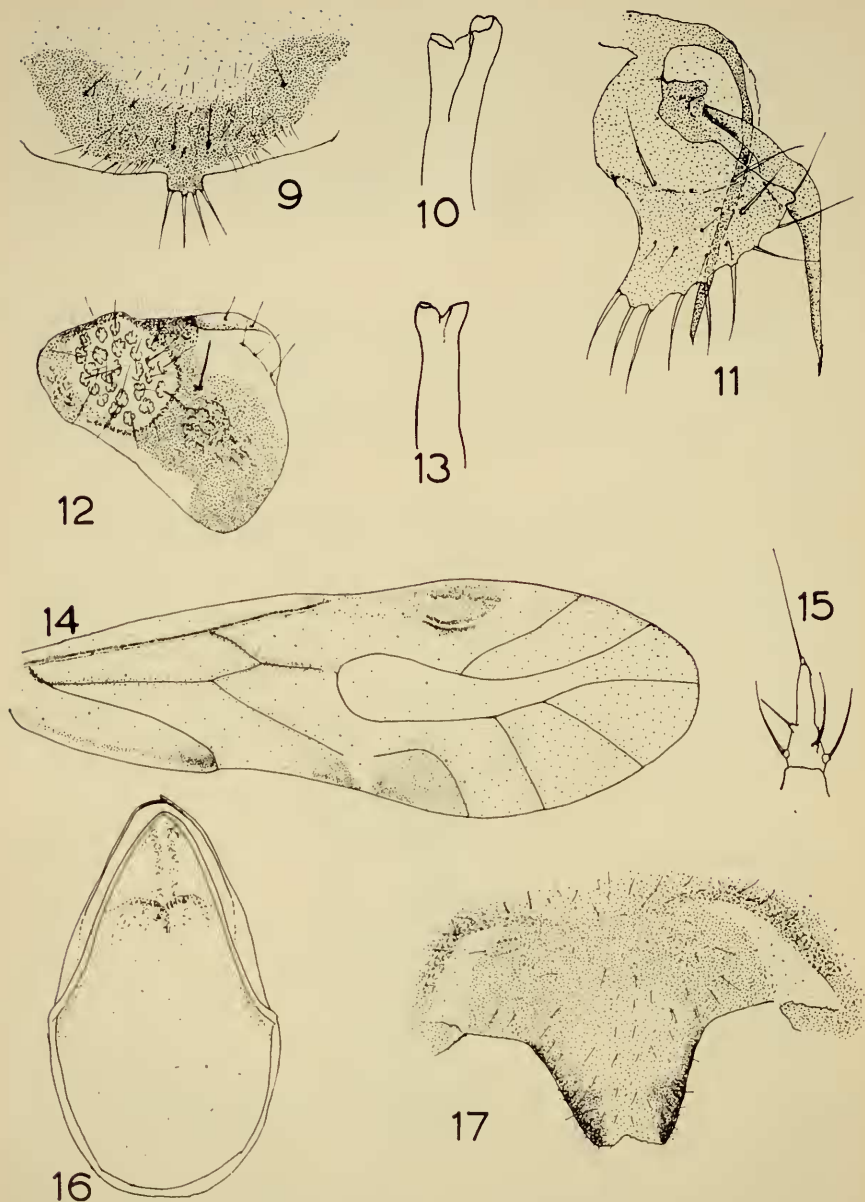
*Nepiomorpha phragmitella* sp. n.

(Figures 9-11)

#### FEMALE.

*Coloration.* Head pale chestnut brown. Epicranial suture darker. Antennae uniformly brown. Eyes black. Maxillary palp brown. Pronotum dorsally pale brown with a dark dorsal ridge. Meso- and metanotum brown with an irregular interruption in the midline. Legs brown. Abdomen marked with irregular brown annulations.

*Morphology.* Of nymphoid facies. Length of body 2.2 mm. Median epicranial suture distinct; anterior arms poorly defined but visible. Vertex rounded, sloping anteriorly into frons and postclypeus, the latter only slightly bulbous. Setae short, fairly dense and blunt-ended. Antennae short, 13-segmented, the joint between the twelfth and thirteenth segment somewhat less distinct than others. Thirteenth segment extended into a small cylindrical papilla. Length of antennal segments:  $f_1$ : 0.116 mm.;  $f_2$ : 0.091 mm. Antennae short. Eyes very small, situated on the sides of the head well below the vertex.



Figures 9-11.—*Nepiomorpha phragmitella* sp.n. 9. Subgenital plate, ♀; 10. Lacinia, ♀; 11. Gonapophyses, ♀.

Figures 12-17.—*Haplophallus capitulatus* sp.n. 12. Paraproct, ♂; 13. Lacinia, ♂; 14. Fore wing, ♂; 15. Distal segment of antenna, ♂; 16. Phallosome, ♂; 17. Hypandrium, ♂.

10/D and PO not measured as the eyes are too small. Ocelli absent. Lacinia (fig. 10). Prothorax narrow, ring-like, with a strong postero-dorsal ridge. Meso- and metathorax subequal, setose. Measurements of hind leg: F: 0.4 mm.; T: 0.6 mm.; t<sub>1</sub>: 0.12 mm.; t<sub>2</sub>: 0.1 mm.; rt: 1.2:1.0. Ctenidiobothria absent. Epiproct with rounded hind margin, setose. On either side near apex a strong seta between which are three short, strong, pointed, marginal setae. Paraproct ovoid, without trichobothrial field but three large setae on upper half of paraproct in addition to a few smaller setae. Ventral surface of paraproct beset with dense patch of small setae adjacent to which, a little dorsad, arise a few large setae. Posterior margin with a strong posterior cone flanked by setae. Subgenital plate (fig. 9) with a shallow median posterior lobe, bearing a row of about six strong marginal setae; transverse setal band reduced to a long row of setae reaching the margin of the subgenital plate on either side. Gonapophyses (fig. 11).

#### MALE.

Unknown.

#### MATERIAL EXAMINED:

31 ♀ ♀, ex fence, South Perth, Western Australia, 20.x.1961. Holotype ♀, paratype ♀ ♀ in The Australian Museum; paratype ♀ ♀ in Department of Agriculture, Perth.

#### DISCUSSION:

This species falls well within the definition of the Nepiomorphinae, of which there are four genera, *Nepiomorpha* Pearman, *Nothopsocus* Badonnel, *Paedomorpha* Smithers and *Roesleria* Badonnel. It cannot be placed in *Roesleria* nor *Paedomorpha* as it has the ventral valve of the gonapophyses fully developed and not reduced to a small membranous flap. It agrees with *Nepiomorpha* in having 2-segmented tarsi, in having a single cone on the paraproct margin, in the form of the subgenital plate, in being apterous in the females (males unknown) and in the form of the genitalia. It has, however, short, 13-segmented antennae (in *Nepiomorpha* reduced to 11 segments). *Nothopsocus* has 3-segmented tarsi, two paraproct cones and has the setae of the subgenital plate lobe in two groups. It is interesting to note that *Nepiomorpha crucifera* Pearman (the type species of the genus) also has this grouping. The present species is very similar to other species of *Nepiomorpha* and is included with them despite the number of antennal segments; the erection of yet another genus in the Nepiomorphine complex to accommodate this species is not warranted.

*Paedomorpha gayi* Smithers.

7 ♀, Cottesloe, 26.vi.1961.

#### Family PHILOTARSIDAE

*Haplophallus capitulatus* sp. n.

(Figures 12-17)

#### MALE.

*Coloration* (in alcohol). Head pale brown with a few dark brown, confluent spots adjacent to compound eyes and median epicranial suture and with dark brown surrounding the ocelli. Postclypeus with brown lines converging anteriorly. Anteclypeus pale, dark adjacent to postclypeus. Labrum dark brown. Genae pale, without markings. Antennae brown, scape, pedicel and first flagellar segment a little paler than remaining segments. Eyes very dark purple, almost black. Ocelli dark. Maxillary palp with first and second segment very pale, third and fourth segments very dark brown. Mesothorax with very dark brown notum, pale along sutures and with pale scutellum. Legs brown. Fore wings (fig. 14) hyaline, marked in shades of brown. Veins dark brown. Hind wings hyaline, very faintly tinged with brown, with a pale brown patch behind end of Cu<sub>2</sub>. Abdomen pale, terminal structures dark brown.



*Morphology.* Length of body: 2.2 mm. Anterior arms of epicranial suture indistinct. Lengths of antennal segments:  $f_1$ : 0.406 mm.;  $f_2$ : 0.280. Setae on first flagellar segment almost as long as width of segment. Thirteenth segment of antenna (fig. 15) narrowing apically and with a long terminal seta. Eyes fairly large, hemispherical. IO/D: 2.0; PO: 0.85. Ocelli large, especially lateral ocelli. Lacinia (fig. 13). Dorsal surface of mesothorax with fairly long, colourless setae. Measurements of hind leg: F: 0.52 mm.; T: 1.0 mm.;  $t_1$ : 0.31 mm.;  $t_2$ : 0.08 mm.;  $t_3$ : 0.09 mm.;  $rt$ : 3.0:1.0:1.1;  $ct$ : 14, 0, 0. Fore wing length: 3.8 mm.; fore wing width: 1.3 mm. Fore wings (fig. 14) broadly rounded apically. Costal area broad; distal half of Sc evanescent and stigmapophysis reduced to a small rudiment. Pterostigma broad, with very few setae.  $R_{2+3}$  curving gently away from  $R_{1+5}$  in distal quarter. Rs and M diverging strongly after separation, the veins at point of separation pale. Culb evanescent and also  $Cu_{1a}$  for a short length after separation from Culb. Hind wing length: 3.0 mm.; hind wing width: 1.0 mm. Epiproct broad, simple, almost devoid of setae except for a few scattered adjacent to posterior margin; surface of epiproct finely sculptured. Paraproct (fig. 12) broad with large round field of trichobothria; a dorsal, sclerotized ridge runs posteriorly from the dorsal side of the trichobothrial field. The degree of sclerotization of the remainder of paraproct varies and, apart from one large seta just posterior to trichobothrial field, there are only a few scattered setae on the distal, lightly sclerotized, part of the paraproct. Hypandrium (fig. 17) well sclerotized, bearing small, fine setae, narrowing posteriorly with a narrow, emarginate hind margin; lateral margins curved dorsally to form a basin in which lies the phallosome. Phallosome (fig. 16).

#### FEMALE.

Unknown.

#### MATERIAL EXAMINED.

2♂, Southern Cross, Western Australia, September, 1955. 1♂, Perth, Western Australia, 2.ix.1940 P. N. Forte. Holotype ♂ in The Australian Museum; paratypes in Department of Agriculture, Perth, Western Australia.

#### DISCUSSION.

This species differs from *H. basilewskyi* (Smithers) in wing colour, from *H. fenestrstigma* (Enderlein) in the colour pattern of the pterostigma, from *H. greyi* (Edwards) in phallosome form and ratio of lengths of hind tarsal segments, from *H. guttatus* (Tillyard) in wing pattern and from *H. maculatus* (Tillyard) and *H. orientalis* Thornton in colour pattern of pterostigma and phallosome form.

#### Family PSOCIDAE

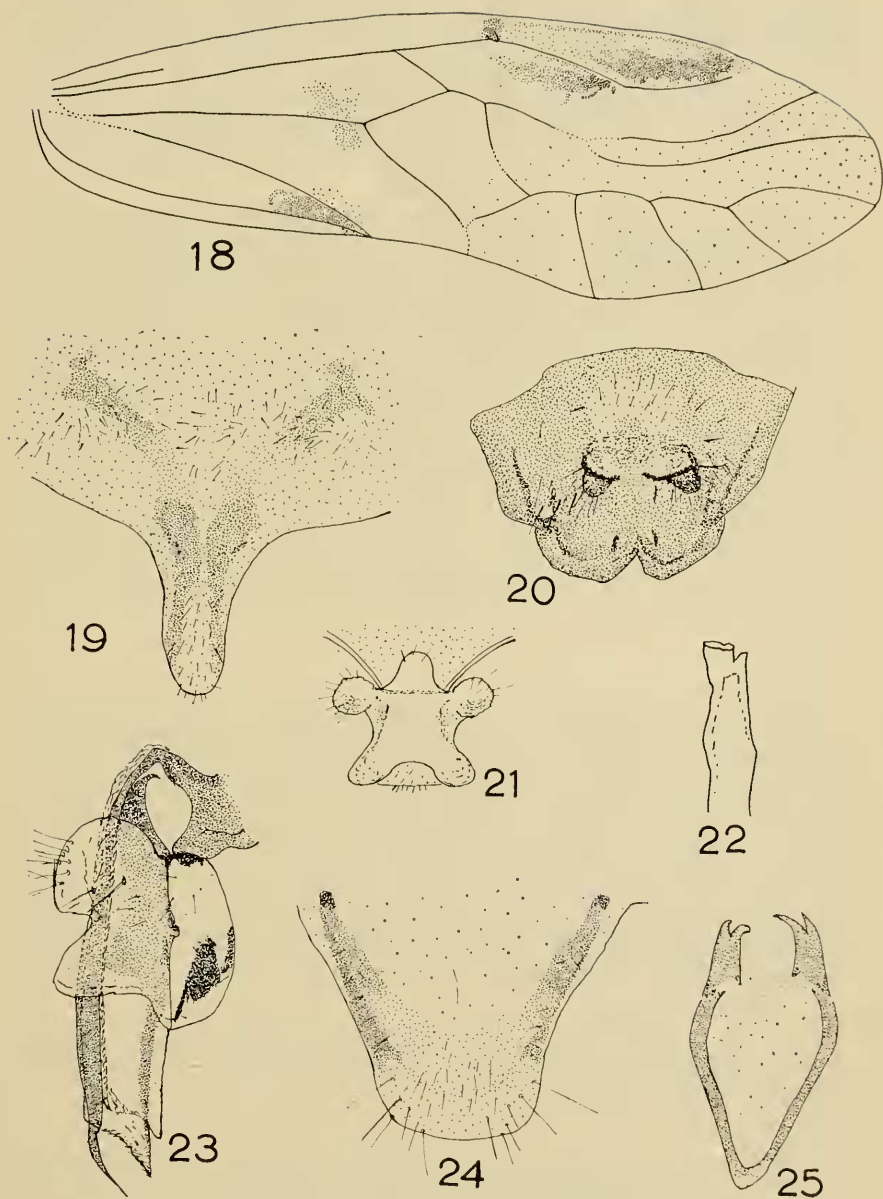
##### *Blaste (Lasiopsocus) michaelsoni* (Enderlein).

1♀, 1♂, Nedlands, 3.vii.1940, P. N. Forte. 1♀, Nedlands, 15.vi.1940, P. N. Forte. 2♀ Nedlands, 10.vii.1940, P. N. Forte. 2♂, Nedlands, 14.vii.1940, P. N. Forte. 1♀, 6.viii.1941, P. N. Forte.

##### *Psocidus notialis* sp. n. (Figures 18-25)

#### FEMALE.

*Coloration.* Head pale buff, with brown spotting on either side of the epicranial suture, across the back of the vertex and adjacent to the compound eyes. When seen from above under low magnification the head appears brown with a pale band on either side running forward to the ocellar triangle and then deflecting outwards to the antenna bases. Area immediately in front of ocellar triangle bears a brown ovoid mark with a pale centre. Postclypeus pale buff with fine pale brown lines running parallel with one another from epistomial suture to anteclypeus, the lines hardly converging. Labrum pale with a median, brown, almost semicircular mark, the arms of the semicircle facing forwards. Genae pale, not marked. Scape, pedicel and first flagellar segment pale;



Figures 18-25.—*Psocidus notialis* sp.n. 18. Fore wing, ♀; 19. Subgenital plate, ♀; 20. Hypandrium, ♂; 21. Epiproct, ♂; 22. Lacinia, ♀; 23. Gonapophyses, ♀; 24. Epiproct, ♀; 25. Phallosome, ♂.

remainder of antenna dark brown, almost black. Eyes black. Ocelli bordered internally with black. Maxillary palp pale, the fourth segment almost black. Mesothorax dorsally very dark brown the suture broadly bordered with pale buff as well as the median line of the antedorsum. Scutellum pale. Legs pale (except for dark hind coxae), with dark brown tarsi; there is a suggestion of a dark ring near the distal ends of the femora. Fore wings (fig. 18) hyaline with marking in various shades of brown. Hind wing hyaline, very faintly tinged with brown in region of wing apex anterior to  $R_{1+5}$  and in angle between  $Cu_2$  and wing margin. Abdomen with basal segment dark brown above, otherwise pale; terminal structures dark brown.

**Morphology.** Length of body: 4.5 mm. Head with gently rounded vertex. Epicranial suture indistinct. Postclypeus large and strongly bulbous. Lengths of antennal segments:  $f_1$ : 0.82 mm.;  $f_2$ : 0.82 mm. Antennal pubescence very short. Eyes large, hemispherical, applied to sides of head, far from reaching vertex when viewed from the side. 10/D: 2.2; PO: 0.82. Ocelli small, closely grouped; anterior ocellus reduced. Lacinia (fig. 22). Measurements of hind leg: F: 0.72 mm.; T: 1.5 mm.;  $t_1$ : 0.3 mm.;  $t_2$ : 0.15 mm.; rt: 2.1; ct: 17, 0. Fore wing length: 4.8 mm.; fore wing width: 1.5 mm. Venation as in figure 18. Pterostigma with weak hind angle, Sc ending in membrane, indistinct. Rs and M fused for a long length. Rs very slightly sinuous before bifurcation, evanescent in distal half of fusion. Radial fork with small angle;  $R_{2+3}$  and  $R_{1+5}$  evanescent in basal sections, running almost parallel for a length, diverging more strongly half way to margin. M strongly curved after separation from Rs, giving a strongly concave discoidal cell. First and second sections of  $Cu_{1a}$  almost in a straight line, Culb evanescent.  $Cu_2$  runs almost parallel with wing margin for most of its length. Fore wings glabrous. Hind wing length, 3.8 mm.; hind wing width: 1.1 mm. Hind wing with Rs and M fused for a length; glabrous. Epiproct (fig. 24). Subgenital plate (fig. 19) with long median posterior lobe. Gonapophyses (fig. 23).

#### MALE.

**Coloration.** As in female.

**Morphology.** Smaller than female. Length of body: 2.7 mm. Head with strongly bulbous postclypeus as in female. Lengths of antennal segments:  $f_1$ : 0.4 mm.;  $f_2$ : 0.4 mm. Antennal setae much longer than in female, in many cases longer than diameter of antenna. Eyes relatively much larger than in female; strongly protruding, just reaching level of vertex when viewed from the side. 10/D: 1.3; PO: 0.82. Ocelli relatively larger than female. Fourth maxillary palp segment three times long as wide. Antennae with long, fine slightly recurving setae; measurement of hind leg: F: 0.6 mm.; T: 1.25 mm.;  $t_1$ : 0.27 mm.;  $t_2$ : 0.12 mm.; rt: 2.2:1.0; ct: 13, 0. Fore wing length: 3.9 mm.; fore wing width: 1.3 mm. Fore wing relatively longer and with more gently rounded apex than in female. Venation generally similar to female but with  $R_1$  forming pterostigma less strongly curved. Epiproct (fig. 21), with three anterodorsally projecting rounded lobes. Hypandrium (fig. 20). Phallosome (fig. 25).

#### MATERIAL EXAMINED.

2♀, 1♂, Southern Cross, Western Australia, September, 1955. Holotype ♀ and allotype ♂ in The Australian Museum; paratype in Department of Agriculture, Perth, Western Australia.

#### DISCUSSION.

This species resembles *Clematostigma maculiceps* (Enderlein) and *Clematostigma tardipes* Edwards. It is easily distinguished from the former by the lack of a dark band in the position of the anterior arms of the epicranial suture and from the latter by the more elongate subgenital plate, the form of the apex of the phallosome and the hypandrium. It is clearly closely related to these species but falls outside the definition of *Clematostigma* Enderlein, of which the distinguishing feature is a pterostigmal spurvein (lacking in *Ps. notialis*). *Clematostigma*, however, is in need of reinvestigation in order



to determine its validity and until this is undertaken *Ps. notialis* is better placed in *Psocidus*. When the position of *C. tardipes* and *C. maculiceps* has been determined *Ps. notialis* will probably be found to be congeneric with them.

Family MYOPSOCIDAE

*Myopsocus griseipennis* (McLachlan).

1 ♂, Claremount, 14.x.1951. 2 ♂, Crawley, 28.x.1951, P. N. Forte. 3 ♂, 12 ♀, Harvey, 12.i.1954. B. A. Edwards.

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